

CIRCUMSCRIPTION OF *AGARISTA BOLIVIENSIS* (ERICACEAE)

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ABSTRACT

Our understanding of the morphological variability of *Agarista boliviensis* is significantly expanded by an examination of a population in the Sierra de Zapla in the Province of Jujuy in extreme northwestern Argentina. The Sierra de Zapla plants may be distinguished from Bolivian populations of *A. boliviensis* by several features relating to the indumentum of stems and leaves, petiole and inflorescence lengths, and leaf margins. The taxonomic status of this population is discussed and a revised description for the species is provided. The pattern of variation of *Agarista boliviensis* is similar to that of the closely related *A. eucalyptoides*. The species also is compared with *A. paraguayensis*, the only other species of *Agarista* occurring in Argentina.

Agarista D. Don ex G. Don is a genus of 31 species occurring in both Africa (including Madagascar) and the Americas (Judd 1984; Gonzalez 1989). The genus is most diverse in South America, and is closely related to several genera in the Andromedeae (Ericaceae) such as *Craibiodendron* W. W. Smith, *Lyonia* Nutt., and *Pieris* D. Don (Judd 1979). The morphological variability of several species is still poorly known, and information regarding one of these, *A. boliviensis* (Sleumer) Judd, is reported herein.

Agarista boliviensis has been collected in the Sierra de Zapla in the province of Jujuy in extreme northwestern Argentina. It was first reported for the country by Legname (1978) and was listed in the Flora of this province by Cabrera (1983). All other populations of the species are located in central and southern Bolivia. The species occurs in mountainous areas from ca. 1200 to 2500 m altitude. In the Sierra de Zapla of Argentina it occurs in moist montane forests and is associated with *Podocarpus parlatorei*, *Alnus acuminata*, *Eupatorium* spp., and *Rubus* spp.

Available herbarium material of *A. boliviensis* from the Sierra de Zapla shows several differences from all known specimens of the species collected

in Bolivia, necessitating the following revised species description. As in Judd (1984), the term "pubescent" refers only to the presence of small, more or less whitish, unicellular, nonglandular hairs.

DESCRIPTION: Rhizomatous shrub or small tree to ca. 7 m tall. Twigs glabrous to moderately pubescent, reddish when young, with nonchambered to obscurely chambered pith; buds to ca. 1 mm long. Leaves alternate, reddish on young shoots; blade revolute in bud, \pm flat at maturity, coriaceous, ovate, $2-7.5 \times 0.9-3.2$ cm, base cuneate to rounded and often slightly asymmetric, apex acuminate, margin entire and minutely undulate to smooth, more or less flat to very slightly revolute at extreme base; adaxial blade surface dark green and lustrous, glabrous or with a very few hairs, especially near margin, but very sparsely to moderately pubescent on midvein; abaxial blade surface glabrous, but very sparsely to moderately pubescent along midvein, with inconspicuous to conspicuous glandular dots along midvein; petiole (3.5-)5-17 mm long, slender and often flexuous. Inflorescences axillary racemes to 0.5-4(-6) cm long; rachis moderately pubescent with whitish hairs; pedicels 4-9 mm long, sparsely to moderately pubescent; bracteoles 2, opposite to alternate, from basal to within lower 1/3 of pedicel, narrowly triangular to linear (rarely ovate), to ca. 1.7 (rarely 8) mm long; floral bracts to ca. 1.5 mm long. Flowers 5-merous; calyx lobes triangular with acuminate apices, $0.9-2 \times 0.5-1.7$ mm, abaxial surface glabrous to moderately pubescent, articulated with pedicel, with ca. 1-1.5 mm long projection between calyx and point of articulation; corolla cylindrical, $6-11 \times 2-5$ mm, abaxially glabrous (or sometimes with a very few unicellular hairs along the veins), white. Filaments 3.5-7 mm long; anthers 1-1.2 mm long. Ovary glabrous to moderately pubescent, especially near apex. Capsules subglobose to ovoid, $3-4.5 \times 4.3-7$ mm, placentae subapical; seeds 1.4-2.6 mm long.

Specimens Examined: ARGENTINA. **Jujuy:** Departamento Capital, Cerro Zapla, Mina 9 de Octubre, Villamil 2936 (BBB, FLAS, NY); *ibid.*, Villamil et al. 4311 (BBB, FLAS); Departamento Capital, Sierra de Zapla, Burkart et al. 30549 (FLAS [frag.], SI); Sierra de Zapla, Mina 9 de Octubre, Cabrera et al. 32009 (SI). BOLIVIA. **Chuquisaca:** Sucre, Alto de Aguas Blancas, Troll 1249 (B). **Cochabamba:** Rosal, below pumping station, Brooke 5702 (E, NY). **Potosí:** Charcas, San Pedro, Pasopaya, Anonymous 3400 (GH). **Santa Cruz:** Tres Cruces, Herzog 1634a (L). **Tarija:** lomas peladas, Alto de las Cañas, Troll 359 (B, M); Camino de Emborozú, La Mamora, Türpe et al. 4777 (BAA).

The very close relationship of the recent collections from the Sierra de Zapla in northwestern Argentina to those from central and southern Bolivia, i.e., typical *Agarista boliviensis*, is seen in the fact that plants from both regions share several characters: absence of multicellular gland-headed hairs; ovate leaves that are more or less flat at maturity, with slender

and at least sometimes slightly flexuous petioles and acuminate apices; often short inflorescence axes that are moderately pubescent (with whitish hairs); white flowers with short calyx lobes; and capsules with subapical placentae (Judd 1984). The Sierra de Zapla population is the southernmost of the species. As is often the case in isolated peripheral populations (Mayr 1969), it is somewhat distinctive morphologically. Plants from this population usually can be differentiated from Bolivian plants by their sparsely to moderately pubescent twigs (vs. glabrous to sparsely pubescent); leaves with the midvein more or less moderately pubescent (vs. only very sparsely pubescent); petioles 3.5–10 mm long and not or only slightly flexuous (vs. 6–17 mm long and frequently flexuous); leaf margins entire and smooth to obscurely undulate (vs. usually entire and minutely undulate, but rarely only obscurely undulate); and inflorescences 0.5–4(-6) cm long (vs. 0.5–2.5 cm long). Some of the flowers on the Sierra de Zapla plants also have longer filaments (to 7 mm) than those seen in flowers of Bolivian plants (to 4.5 mm). The Sierra de Zapla plants have been illustrated by Cabrera (1983) and a typical Bolivian plant of *A. boliviensis* was pictured in Judd (1984).

Initially, we considered giving varietal rank to this distinctive population of *Agarista boliviensis* in the Sierra de Zapla. However, additional study of available material indicated that formal taxonomic recognition is unwarranted due to the degree of overlap in the presumed diagnostic characters, and because an extremely similar pattern of variation is shown by the closely related *A. encalyptoides* (Chamisso & Schlechtendal) G. Don (see Judd 1984).

Agarista encalyptoides is a widely distributed species of southern Brazil that shows variation in stem and leaf pubescence, degree of undulation of leaf margin, length and amount of flexuousness of the petiole, and inflorescence length (Judd 1984). It is, thus, not too surprising that additional collections of *A. boliviensis* have revealed extensive variability in these same features. *Agarista encalyptoides* can easily be distinguished from *A. boliviensis* by its ovate to oblong leaves and the indumentum of its inflorescence axes, i.e., densely covered with ferruginous hairs in *A. encalyptoides* in contrast to moderately pubescent with whitish hairs in *A. boliviensis* (Judd 1984).

The only other species of *Agarista* occurring in Argentina is *A. paraguayensis* (Sleumer) Judd. This species grows in northeastern Argentina in Misiones province as well as several localities in Paraguay (Judd 1984). *Agarista boliviensis* differs from *A. paraguayensis* in several features: longer and occasionally slightly flexuous petioles, consistently acuminate leaf apices, leaves always lacking a dense indumentum on abaxial surface, con-

sistent absence of multicellular gland-headed hairs, often shorter racemes, subapical placentae, and longer seeds. Although superficially similar, the two taxa probably are not closely related. Noteworthy in this regard, is the difference in placenta position in the two species, i.e., subapical in *A. boliviensis* and more or less central in *A. paraguayensis*.

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